



United States Department of the Interior  
BUREAU OF LAND MANAGEMENT  
NEVADA STATE OFFICE

850 Harvard Way  
P.O. Box 12000  
Reno, Nevada 89520

IN REPLY REFER TO:

N-47748  
2800  
(NV-943.2)

NNA.880113.0002

U.S. Department of Energy  
Nevada Operations Office  
P. O. Box 98518  
Las Vegas, NV 89193-8518

RIGHT-OF-WAY RESERVATION

KNOW ALL MEN BY THESE PRESENTS, that in accordance with Section 507 of the Federal Land Policy and Management Act of 1976 (90 Stat. 2781, 43 U.S.C. 1767) that the United States of America acting by and through the Bureau of Land Management (BLM), U.S. Department of the Interior, does hereby issue and reserve to the U.S. Department of Energy (DOE) and its assigns, a right-of-way to conduct site characterization studies upon, over, under, and through the following described federal lands situated in the State of Nevada, to wit:

Mount Diablo Meridian, Nevada

- T. 12 S., R. 48 E.,  
secs. 13, 25 through 29, and 32 through 36.
- T. 13 S., R. 48 E.,  
secs. 10 through 15, 22 through 27, and 34 through 36.
- T. 14 S., R. 48 E.,  
secs. 1 through 3, 10 through 15, 22 through 27, and 36,  
except patent number 27-83-0002.
- T. 15 S., R. 48 E.,  
sec. 1
- T. 13 S., R. 49 E.,  
secs. 7 through 9;  
sec. 10, W $\frac{1}{2}$ ;  
sec. 15, W $\frac{1}{2}$ ;  
secs. 16 through 21;  
sec. 22, W $\frac{1}{2}$ ;  
sec. 27, W $\frac{1}{2}$ ;  
secs. 28 through 33;  
sec. 34, W $\frac{1}{2}$ .

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T. 14 S., R. 49 E.,  
 sec. 3, W $\frac{1}{2}$ ;  
 secs. 4 through 9;  
 sec. 10, W $\frac{1}{2}$ ;  
 sec. 15, W $\frac{1}{2}$ ;  
 secs. 16 through 21;  
 sec. 22, W $\frac{1}{2}$ ;  
 sec. 27, W $\frac{1}{2}$ ;  
 secs. 28 through 33;  
 sec. 34, W $\frac{1}{2}$ .

T. 15 S., R. 49 E.,  
 sec. 3, W $\frac{1}{2}$ ;  
 secs. 4 through 6.

The federal lands to which the description applies contains 51,632 acres, more or less. (A map showing the right-of-way described above is attached hereto as a part of the Plan of Development, Exhibit A of this grant.)

The right-of-way herein granted and reserved is for the limited use of site characterization activities as described in the Plan of Development, Exhibit A. The activities in the "core area" include, but are not limited to, installation of environmental monitoring facilities, geological and hydrological studies, access roads, power lines and drill pads, and trenching, coring, drilling, boring, seismic and other geophysical support activities; and exploratory shaft facilities including site surface preparation, support facilities, and exploratory shaft construction and subsurface construction of research facilities.

The activities in the "use area" include, but are not limited to, installation of environmental monitoring facilities, survey, access to and location of study sites, surface stratigraphic studies, meteorological monitoring studies, installation of rain and stream flow gauges, and geologic mapping.

Core and use areas are as described in the Plan of Development, Exhibit A of this grant.

This use is for the DOE, its agents and contractors, subject to the regulations of the Secretary of the Interior at 43 CFR 2800 and to the following terms and conditions:

1. DOE shall reimburse the BLM for the costs incurred in processing and administering this right-of-way reservation.
2. The BLM retains the right to occupy and use the right-of-way, and to issue or grant rights-of-way or other land uses for other purposes, upon, over, under, and through the lands, provided that the occupancy and use will not unreasonably interfere with the rights granted herein. BLM may authorize other uses on the core area after initiating consultation with DOE. DOE will initiate consultation for proposed uses on the use areas.

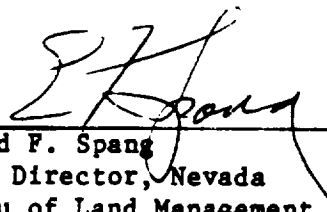
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3. This reservation is for site characterization studies only and does not convey any rights for the construction or initial operation of a nuclear waste repository.
4. The holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the Plan of Development which is approved and made part of the grant and identified as Exhibit A. Any relocation, additional construction, or use that is not in accord with the approved Plan of Development, shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved Plan of Development, shall be made available on the right-of-way area during construction, operation, and termination to the authorized officer. Noncompliance with the above will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.
5. DOE is required to fulfill all requirements of the National Environmental Policy Act and all requirements for mitigation, stabilization, and rehabilitation as described in the Plan of Development and further listed in Sections 4.1.1.4 and 4.1.2.6 of the Environmental Assessment. This responsibility will continue until the requirements are met, regardless of expiration of the right-of-way reservation.
6. Any required site specific environmental analyses necessary for DOE activities will be conducted by DOE and will be coordinated with BLM.
7. No hazardous materials will be disposed of on public lands.
8. Archeological and threatened and endangered species surveys will be conducted by DOE prior to start of surface disturbing activities. If antiquities including, but not limited to, archeological items, paleontological objects, or other objects of historical or scientific interest are discovered on the subject sites, the District Manager, BLM, in consultation with the State Historical Preservation Officer and Manager, DOE, will determine the appropriate action to be taken. Until such action has been decided, DOE will ensure these items, objects, or conditions are left intact. Cultural resource reports will be made available to the BLM prior to surface disturbance at site.
9. All desert tortoise found in areas where their continued presence constitutes a hazard to themselves, will be removed to a safe shady area (at least 150 yards from surface disturbance). Construction personnel will be informed that collection of tortoises is prohibited and punishable by a minimum \$100.00 fine.
10. Trenches, shafts, and bores shall be marked, fences, or otherwise protected so as not to constitute a hazard to the public or to wildlife.

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11. Core holes or wells containing potentially usable water should be left in a manner which facilitates their development as water sources and prior to termination of the agreement or abandonment of the holes/wells, DOE will consult with BLM to determine if they will be sealed and capped, plugged back, or turned over to the BLM as is.
12. The District Manager, Las Vegas District Office, Las Vegas, Nevada, shall act as BLM's authorized officer for implementation of this right-of-way reservation.
13. The Director, Waste Management Project Office, Nevada Operations Office, Las Vegas, Nevada shall act as DOE's contact for implementation of this right-of-way reservation.
14. This reservation shall remain in effect for a period of thirteen (13) years from the date shown below and is subject to amendment, adding conditions to the right-of-way reservation in consultation with DOE, and/or renewal.

Dated this 6<sup>th</sup> day of January, 1988

  
\_\_\_\_\_  
Edward F. Spang  
State Director, Nevada  
Bureau of Land Management

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## PLAN OF DEVELOPMENT

The U.S. Department of Energy (DOE) has responsibilities under Title I of the Nuclear Waste Policy Act of 1982 (NWPA) for the development of repositories for the disposal of high-level radioactive waste and spent nuclear fuel. Finding an area suitable for the disposal of these materials is of high national interest. In February 1982, nine potentially acceptable sites were identified, including Yucca Mountain, then in Nye County, and now in Bullfrog County, Nevada. In December 1984, DOE issued final siting guidelines (10 CFR Part 960). Five sites, of the original nine, were nominated for site characterization, including Yucca Mountain. The NWPA defines "site characterization" as:

"Activities, whether in the laboratory or in the field, undertaken to establish the geologic condition and the ranges of parameters of a candidate site relevant to the location of a repository, including borings, surface excavations, excavations of exploratory shafts, limited subsurface lateral excavations and borings, and in-situ testing needed to evaluate the suitability of a candidate site for the location of a repository, but not including preliminary borings and geophysical testing needed to assess whether site characterization should be undertaken."

The nomination of each site was accompanied by an environmental assessment (EA) that included an evaluation of the site in terms of the siting guidelines. Final EAs were published in May 1986. On May 28, 1986, three sites, including Yucca Mountain, were recommended by the Secretary of the DOE, and were approved by President Reagan for site characterization. The purpose of the proposed Right-of-Way Reservation (ROWR) is to allow the DOE access to public lands managed by the U.S. Department of the Interior, Bureau of Land Management and on a portion of the Nellis Air Force Range, in order to conduct site characterization activities. The ROWR will be required year round for a period of 13 years.

The ROWR focuses on Yucca Mountain and the range of site characterization activities that must be performed to technically establish the geologic and hydrologic conditions of the area. The majority of these activities will take place within an area of 70,490 acres, more or less, and the ROWR requests this area. By direction, this area is divided into two smaller areas: the "core area", that area shown in Figure 3-1 of the EA, consisting of about 16,640 acres, 11,520 acres on the Nellis Range and 5,120 acres on public land; and the "use area", consisting of about 53,850 acres, 7,180 acres on the Nellis Range and 46,669 acres on public land. DOE requests consultation by BLM on any activities proposed for the core area after the ROWR is granted. Consultation with BLM on the use area will be initiated by DOE. It is not anticipated that site characterization activities will interfere with current or planned activities on the lands within the proposed ROWR.

### LEGAL DESCRIPTION OF CORE AREA

Mount Diablo Meridian, Nevada  
Department of Defense, Nellis Air Force Range  
T.12S. R.49E., unsurveyed,

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Sections 12, 13, 24, 25, and 36 exclusive of those portions east of a line beginning:

latitude 36° 46' 19.140" N  
longitude 116° 26' 48.021" W

northerly to a point

latitude 36° 52' 00.000" N  
longitude 116° 26' 45.045" W

northerly to a point

latitude 36° 59' 00.267" N  
longitude 116° 26' 45.838" W;

Section 9 E 1/2;

Section 16 E 1/2;

Section 21 E 1/2;

Section 28 E 1/2;

Section 33 E 1/2.

#### Public Lands

T.13S. R.49E., unsurveyed,

Sections 7 through 9 inclusive;

Sections 16 through 21 inclusive;

Sections 10, 15, and 22 exclusive of those portions east of a line beginning:

latitude 36° 46' 19.140" N  
longitude 116° 26' 48.021" W

northerly to a point

latitude 36° 52' 00.000" N  
longitude 116° 26' 45.045" W

#### LEGAL DESCRIPTION OF USE AREA

Mount Diablo Meridian, Nevada

Department of Defense, Nellis Air Force Range

T.12S. R.49E., unsurveyed,

Sections 7 and 8;

Sections 17 through 20 inclusive;

Sections 29 through 32 inclusive;

Section 9 W 1/2;

Section 16 W 1/2;

Section 21 W 1/2;

Section 28 W 1/2;

Section 33 W 1/2.

#### Public Land

T.12S. R.48E., unsurveyed,

Section 13;

Sections 25 through 29 inclusive;

Sections 32 through 36 inclusive.

T.13S. R.48E., unsurveyed,

Sections 10 through 15 inclusive;

Sections 22 through 27 inclusive;

Sections 34 through 36 inclusive.

T.14S. R.48E., unsurveyed,

Sections 1 through 3 inclusive;

Sections 10 through 15 inclusive;

Sections 22 through 27 inclusive;  
 Section 36, except patent #27-83-0002.  
 T.15S. R.48E., unsurveyed,  
 Section 1.  
 T.13S. R.49E., unsurveyed,  
 Sections 28 through 33 inclusive;  
 Sections 27 and 34 exclusive of those portions east of a line beginning:  
 latitude  $36^{\circ} 46' 19.140''$  N  
 longitude  $116^{\circ} 26' 48.021''$  W  
 northerly to a point  
 latitude  $36^{\circ} 52' 00.000''$  N  
 longitude  $116^{\circ} 26' 45.045''$  W.  
 T.14S. R.49E., unsurveyed,  
 Sections 4 through 9 inclusive;  
 Sections 16 through 21 inclusive;  
 Sections 28 through 33 inclusive;  
 Sections 3, 10, 15, 22, 27, and 34 exclusive of those portions east of a  
 line beginning:  
 latitude  $36^{\circ} 41' 05.866''$  N  
 longitude  $116^{\circ} 26' 47.943''$  W  
 northerly to a point  
 latitude  $36^{\circ} 46' 19.140''$  N  
 longitude  $116^{\circ} 26' 48.021''$  W.  
 T.15S. R.49E., unsurveyed,  
 Sections 4 through 6 inclusive;  
 Section 3 exclusive of those portions east of a line beginning:  
 latitude  $36^{\circ} 40' 13.666''$  N  
 longitude  $116^{\circ} 26' 47.915''$  W  
 northerly to a point  
 latitude  $36^{\circ} 41' 05.866''$  N  
 longitude  $116^{\circ} 26' 47.943''$  W.

#### SITE CHARACTERIZATION ACTIVITIES IN BOTH THE CORE AND USE AREA

Within both the core and use area six types of site characterization activities are planned: hydrologic; geologic; geophysical; geochemical; paleoclimatic; and meteorological.

#### Hydrologic Activities

Streamflow monitoring: Flumes instrumented with continuous recording stream stage gages will be installed at 24 sites on Yucca Mountain drainages. They will be used to measure flow rates associated with precipitation.

Debris flow monitoring: Debris flow movements will be observed at stream channels during their occurrence in order to understand flow mechanisms and their causes.

Erosion Monitoring: Scour chains have been installed in three stream channels to monitor the amount of erosion that occurs in washes at times of heavy runoff. Maintenance and operation of the scour chains will continue.

Geomorphic Mapping: Mapping of geomorphic features, including hand sample collection, will be conducted. This activity will involve casual access, without excavation, drilling, road construction or off-road vehicular travel.

Infiltration monitoring: Infiltration of precipitation is currently monitored periodically with neutron moisture meters and gamma-gamma density logging tools in 74 holes, which are 50 to 100 feet deep. An additional 24 holes will be drilled. At up to 50 locations, 250-square-foot areas will be enclosed by berms. A static water level will be maintained for a prescribed period of time. An organic dye tracer will be mixed with the water. After monitoring is finished, up to six 25-foot-deep excavations may be conducted to map the flow pathways marked by the dye. Fourteen large plot (400 square feet) and 23 small plot (9 square feet) rainfall simulation tests will be conducted. Each small plot site will have four five-foot monitoring holes, and each large plot site will have ten 30- to 50-foot-deep holes. Irrigation systems will be installed and several discrete rainfall simulation events will be conducted at each site.

Unsaturated zone exploration and monitoring: Seven holes, varying in depth from 400 to 1,800 feet have been drilled in the deep unsaturated zone. Ten more holes will be drilled and all 17 will be instrumented and monitored for several years. A portable power source will be required at each location.

Water table monitoring: Sixteen water table drillholes have been bored to depths ranging from 1,600 to 2,000 feet. An additional eight will be required. Long term recording of water level and barometric pressure will be necessary to obtain an accurate correlation between the two. All 24 will be instrumented for automated monitoring.

Saturated zone drilling, pump testing, and tracer testing: A multi-well pumping test will be conducted across the Solitario Canyon fault to investigate the conductivity of the fault zone. A new 3,000-foot-deep hole will be drilled about 3,000 feet from an existing hole. The two holes will be used alternately as pumping and observation wells.

Solitario Canyon horizontal hole: A horizontal borehole is planned with the intention of penetrating the Solitario Canyon fault at a point where the fault plane is bound by blocks of the Topopah Spring welded tuff on both sides. The purpose is to examine the extent of fracturing and gouge development, and evaluate the hydrogeologic significance of fault related features on water movement within the fault zone.

#### Geologic Activities

Exploratory geologic coreholes: Two coreholes of approximately 5,000 foot depth will be drilled in Yucca Wash and Drill Hole Wash. Construction of access roads and drill pads will be required.

In-situ stress investigation drilling and testing: Two drillhole locations will be selected for these tests. A series of hydrofracturing stress measurements will be performed using straddle packers, and water as injection fluid, until valid measurements have been obtained from at least three different depths. Depending on the results of the tests on these two holes, as many as 20 additional holes could be drilled.



Volcanic exploratory drillholes: No more than four exploratory holes are planned to investigate magnetic anomalies. They will be drilled using conventional rotary drilling methods to a depth of approximately 1,000 feet. Each hole will be drilled until igneous rock is reached, or until sufficient depth is reached, depending on surface and downhole geophysical measurements.

Performance assessment drilling program: Thirty five to 40 continuous core holes may be drilled to systematically acquire site-specific subsurface information on the repository block. Three phases are planned, to allow for evaluation of collected data before proceeding further. The first phase would consist of 12 holes; the second, 12 holes; and the third, at least nine holes.

Tectonic trenching: Trenching activities (both new excavation and rework of existing locations) are planned for individual faults in the vicinity of Yucca Mountain. Exact locations and numbers have not yet been determined.

Geologic and surficial deposits mapping: Detailed mapping at a scale of 1:12,000 will be performed in an area of about 50,000 acres surrounding Yucca Mountain; specific locations have not yet been identified. Some soil pits up to five feet deep will be dug by off-road mechanized digging equipment.

Surface stratigraphic studies: These studies will consist of intensive mapping of areas of exposed bedrock. No excavation or road construction will be associated with these studies.

Surface fracture network studies: Fractures and joints will be mapped at selected exposures of bedrock in the immediate vicinity of Yucca Mountain. Natural outcrops of the Paintbrush Tuff will be mapped in the field on aerial photographs at a scale of approximately 1:50.

Geodetic surveys: Permanent benchmarks have been installed on and around Yucca Mountain. A 43 mile west-east level line extends from Crater Flat to Rock Valley, and a quadrilateral network has been installed across several faults in the immediate vicinity of the site. Resurveys will be conducted biannually.

#### Geophysical Activities

Seismic network monitoring: The Southern Great Basin Seismic Network, 54 monitoring stations centered on Yucca Mountain, was installed in 1978-1979 by the USGS. Each site is visited every three to six months for inspection and maintenance. Access is by existing roads.

Portable seismic network monitoring: Portable seismometers are occasionally deployed at the surface and in existing drillholes to monitor motions from underground nuclear explosions (UNEs); data from these studies are used to develop the relationship between earthquakes and UNEs, and for prediction of potential ground motion during repository operation.

Shallow seismic reflection: Shallow reflection will be conducted in short (1 to 5 kilometer) traverses. Planned lines include two in Crater Flat and up to seven in the immediate vicinity of Yucca Mountain. All lines will use 9.1 meter source points; common midpoint data gathers will be stacked every 4.6

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meters for 12 fold, or every 9.1 meters for 24 fold, using 12 geophones per group. Some off road vehicle activity will be necessary.

Shallow seismic refraction: These surveys will be used to delineate shallow subsurface structures. Portable engineering seismographs and repetitive hammer sources will be used. No off-road vehicle travel will be required.

Regional seismic refraction: Ammonium nitrate explosives will be set off in ten inch diameter, 150-foot-deep holes spaced every six miles along predetermined straight lines located along existing highways and roads. They will be charged with about 2,000 to 4,000 pounds of explosives, and their upper 50 feet tamped with gravel. Receivers will be discrete, portable, battery-powered event recorders. Exact locations have not yet been determined, but plans include an east-west profile centered on Yucca Mountain, with two or three cross profiles.

Regional magnetotelluric (MT) surveys: Two 300- to 3,000-foot long perpendicular dipole electrode arrays are placed on the ground surface. A magnetometer sensor, a 30- to 300-foot-long loop of wire buried a few inches beneath the surface with a shovel, is then used to measure the conductivity structure of the earth. Off road vehicle access is not required. Station spacing for MT surveys in Crater Flat and Amargosa Valley would be three to five miles. Specific station locations have not been identified.

Other geophysical surveys: Detailed ground geophysical surveys will be performed in the immediate vicinity of Yucca Mountain, if surveys indicate the possible existence of anomalous structures. Total natural magnetic intensity, the magnitude of gravitational acceleration, or other geophysical parameters will be measured at stations distributed over and next to possible anomalies. Ground magnetic data will be acquired using portable equipment, and will not require vehicle access to stations. Transporting gravity instruments, however, will require off-road vehicle access.

Vertical seismic profiling (VSP) studies: VSP will be used at Yucca Mountain to image the subsurface where the proposed repository would be located. Subsurface geophones will be installed in the exploratory shaft facility, three unsaturated zone drillholes, and in a VSP support drillhole. Vibrator trucks, which will serve as seismic sources, will be deployed on the surface of Yucca Mountain, on and next to existing roads.

#### Geochemical Activities

Samples will occasionally be acquired from surface outcrops, coreholes, and groundwater for laboratory analysis of geochemical interactions between the tuff material, groundwater, radionuclides, and microorganisms.

#### Paleoclimatic Activities

Soil Studies: These studies are performed to support climatic modeling. Mechanical dust traps have been installed at several locations. Field activities will include dust trap sampling, testing and sampling of soils, and measurement of carbon dioxide and soil gases. Off road vehicle access is not required.

Playa coring, trenching, and sampling: Sixteen trenches have been excavated as part of tectonic, geologic, and paleoclimatic studies. They are sampled and mapped on an ongoing basis. Sample collection activities include backhoe trenching to depths of up to 12 feet, use of truck mounted auger drills, drive tube samplers, or other portable drills (to depths of about 100 feet). It may occasionally be necessary to widen, deepen, or lengthen existing trenches to collect additional data or prevent trench degradation.

Subsurface sampling of the Bow Ridge fault: Several shallow coreholes (generally less than 50 feet deep) will be drilled for investigation of the subsurface character of the Bow Ridge fault along a profile across the surface indications of the fault zone. If the vertical holes do not intersect the deposit, one or more deeper (200 to 500 feet) coreholes may be drilled at a steep angle to intersect the fault zone at depth.

#### Meteorological Activities

Five meteorological monitoring towers, from ten to 60 meters in height, have been installed. Additionally, two continuously recording tipping bucket and 14 plastic rain gages have been installed. Operation and maintenance of existing meteorological monitoring equipment will continue. Ten additional monitoring stations will be added to the network. Precipitation gages will be installed at the 24 stream flow monitoring sites discussed earlier.

#### SITE CHARACTERIZATION ACTIVITIES IN THE CORE AREA ONLY

##### Exploratory Shaft Facility (ESF)

The ESF will be built in Coyote Wash on the east flank of Yucca Mountain on the Nellis Range and the Nevada Test Site. The main exploratory or testing shaft is designated ES-1. A secondary shaft, ES-2, will be excavated with relatively little associated testing, to expedite access to the levels where underground testing will be conducted. Both shafts will have a completed inside diameter of 12 feet, and will be nominally lined with two feet of nonreinforced concrete. The total depth of ES-1 will be about 1480 feet, with room development at about the 600, 1020, and 1390 foot levels. The total depth of ES-2 will be about 1100 feet, with development only at about the 1020 foot level, where the two shafts will be connected. After both shafts are complete, ES-1 will be used for geotechnical investigations and for lifting men and materials, and ES-2 will be used for services and hauling rubble.

Testing in the ESF will be conducted in two phases: shaft construction phase and in-situ testing phase.

The test activities to be conducted in the shaft construction phase are: shaft and drill wall mapping; perched water test; shaft convergence test; chlorine-36 water movement tracer experiment; excavation effects test; radial boreholes test; intact rock fracture sampling; and demonstration breakout room tests.

During the in-situ testing phase the test activities are: infiltration test; bulk permeability test; Calico Hills hydrogeology test; hydrochemistry test; sequential drift mining evaluations; heated block experiment; canister-scale heater experiment; plate loading test; small-scale heater experiment; slot

strength test; overcore stress test; development prototype boring machine test; diffusion test; and waste package environment tests.

## CONSTRUCTION ACTIVITIES

### Drilling

The drilling plans outlined above call for an additional 45 to 90 deep holes requiring drill pads, and 300 to 350 shallow holes. At this stage some proposed holes are tentative, or conceptual at best, and whether they are drilled will depend on results of other drilling and testing programs. Deep holes will require construction of a raised and level dirt drill pad which will include a parking area and equipment yard and a mud pit for discharge of any recovered drilling fluid and cuttings. Up to about 2.5 acres will be disturbed for each deep drill site. Little, if any, surface preparation will be required for the shallow drillholes and the holes which may be used for geophysical surveys.

### Road Construction

A fairly extensive road network is already in existence in the Yucca Mountain area. Some of the drill sites and infiltration sites will require construction of temporary access roads. Unimproved dirt roads will be constructed with a road grader or the use of a bulldozer dependent on terrain. The roads will not be engineered in detail. Water will be used for compaction and dust control, as required. Culverts will not be used. For all locations where road construction is required, length will be considerably less than five miles.

### Trench Excavation

As many as 20 new trenches are planned for site characterization. Trench depth will range from four to 10 feet, width will be six to 12 feet, and length will be up to 500 feet. Trenches longer than about 150 feet may be excavated as a series of 100 to 200 foot long trenches which are parallel but are offset in both the transverse and longitudinal directions to facilitate excavation. Material removed during excavation will be stored at the surface next to each trench.

### Exploratory Shaft Facility (ESF)

The major site characterization construction activity is the exploratory shaft facility. About 21 acres will be disturbed by construction of roads and surface facilities for the ESF. The site will be leveled and stabilized with about six inches of gravel. Some surface excavation and about 100,000 cubic yards of fill material will be required.

An access road leading westward from Jackass Flats to the boundary of the NTS can currently accommodate heavy equipment. The road is 23 feet wide, has three foot shoulders, and is surfaced with a double oil and chip layer. It will be extended 1,300 feet to the ESF, and constructed on fill material to the same standards as the existing road. Culvert installation in the dry washes along the route will be required to protect the road. Road construction will disturb a 160-foot-wide path.

Utility and communication systems at the ESF will include an electric substation and an underground electric distribution system, a water storage and distribution system, systems for collecting and disposing of sanitary and industrial wastes and refuse, and telephone communications. The electrical substation at the ESF will be supplied by a 1,300 foot extension of an existing 69 kV transmission line that presently ends at the NTS boundary. Water for the ESF will be supplied from existing well J-13 on the NTS. The water will be pumped about six miles through a six inch PVC pipeline buried two feet below grade. This pipeline presently exists to the NTS boundary and will be extended to the ESF. Water will be stored in a 150,000 gallon tank located above and to the west of the ESF. Sanitary waste will be collected and disposed of in a sewage system located to the east. The specific type of sewage system has not yet been determined.

Prefabricated buildings will be assembled on concrete foundations at the shaft pad. Both shafts will have a repair shop, warehouse, and a hoist house. Concrete will be prepared initially at existing facilities on the NTS and trucked to the site. During ESF site preparation, a batch plant will be constructed at the site. About one acre will be needed for the plant and aggregate and cement storage. Trailers will be installed on the shaft pad, and will be used for changing rooms and showers, office and laboratory space, data acquisition equipment, lunch and first aid rooms, a visitor center, and dormitories. Parking areas for the trailers will be paved with a double oil and chip layer. Three powder magazines covering about one acre will be used to store various types of explosives. A 160,000 cubic yard capacity pit for storage of excavated waste rock will be constructed. It will be lined to control percolation of fluids into the ground. Water and other waste fluids will be disposed of in a 375,000-gallon-capacity mine wastewater evaporation pond. The pit containing the pond will be bermed and lined with an impermeable liner to control seepage to the ground. Construction of ES-1 and -2 will be by a drill-blast-muck cycle with concrete lining installed with a retractable slip form.

#### Fencing

In general, fences will not be required at site characterization locations except where necessary for safety of project workers or casual personnel. The ESF will be fenced for industrial security and safety considerations.

#### MITIGATION AND RECLAMATION

Mitigation and reclamation will be used to return lands disturbed by site characterization to a stable ecological state with a form and productivity similar to the predisturbance state. The standard operating practices described in Sections 4.1.1.4 and 4.1.2.6 of the Environmental Assessment will be followed. Reclamation activities will occur in three phases: interim reclamation and site stabilization which will occur during site preparation and construction; final reclamation following abandonment or termination of sites; and post-reclamation monitoring.

#### Interim Reclamation and Site Stabilization

Several land reclamation procedures will be implemented prior to site development and during site use which will enhance surface soil stabilization,

control erosion, provide wildlife habitats, and reduce the cost of construction site maintenance. These measures will include: conducting information gathering preconstruction surveys; removing and stockpiling topsoil; installing or constructing erosion control devices prior to site development; and establishing vegetative cover over bare soils as soon as possible.

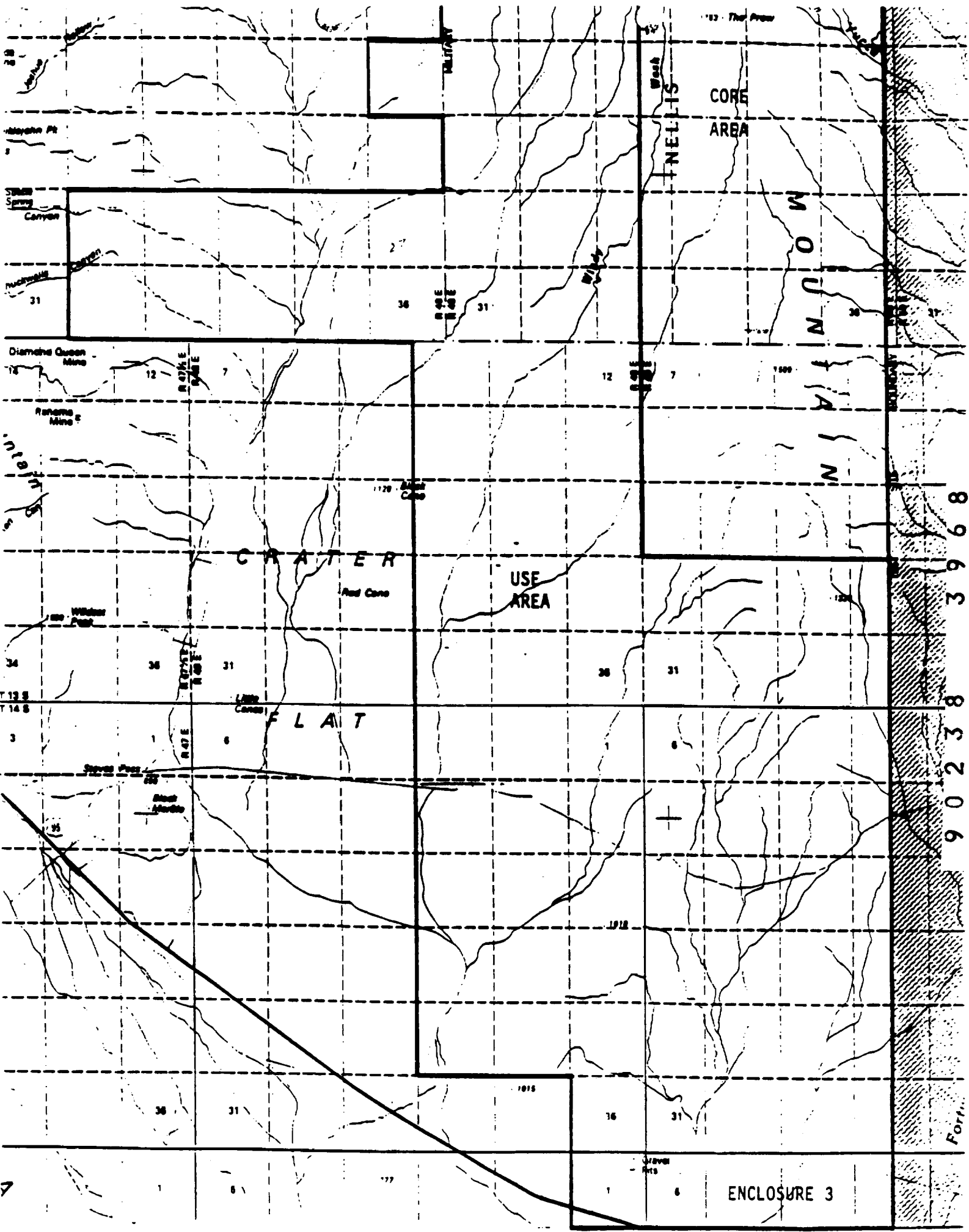
#### Final Reclamation

Restoring disturbed sites to productive use will commence after all activities have ceased and the site is abandoned. In many cases this may not occur before the end of site characterization. After abandonment all wastes including garbage, concrete, asphalt, equipment, pipes, drilling muds, sewage, waste-water, etc., will be removed or buried on site. Soils from each abandoned site and the topsoil stockpile will be analyzed to determine the chemistry, nutrient levels, and concentrations of contaminants present. This information will be used to determine what treatments or amendments, if any, are required to enable the soil to support plant growth. The indicated treatment will be performed. Next, rough site preparation will relieve soil compaction and install erosion controls. After rough site preparation, the stockpiled topsoil will be spread, the seedbed prepared, and seeding, planting, and mulching accomplished.

#### Post Reclamation Monitoring

The perimeter of each reclaimed site will be permanently and visibly staked. These sites will be visited periodically to monitor vegetative growth and animal use. Quantitative site monitoring will begin on the third spring after reclamation, provided that reseeding has not been necessary, and continue until the site is judged completely reclaimed.

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ENCLOSURE 3

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Return Receipt Requested

DECISION

State of Nevada :  
Office of the Attorney General : Right-of-Way  
Capitol Complex :  
Carson City, NV 89710 :

OBJECTIONS DISMISSED  
RIGHT-OF-WAY GRANTED

By right-of-way reservation pursuant to Section 507 of the Federal Land Policy and Management Act of 1976 (50 Stat. 2701, 43 U.S.C. 1757), the Bureau of Land Management (BLM) has authorized to the Department of Energy (DOE) the use of public lands in Bullfrog County for site characterization studies. The reservation to DOE was granted on this date. A copy of the reservation document is enclosed.

The State of Nevada is hereby notified of this action because it has objected to the issuance of a right-of-way in lieu of a withdrawal of the lands for the project. The objection is dismissed and the right-of-way has been granted.

The issuance of this right-of-way grant constitutes a final decision by the BLM in this matter. You have the right of appeal to the Board of Land Appeals, Office of the Secretary in accordance with the regulations in 43 CFR Part 4.400. If an appeal is taken, the notice of appeal must be filed in the Nevada State Office of BLM (not the Office of the Board) within thirty (30) days of receipt of the decision appealed from, so that the case file can be transmitted to the Board. The notice may contain a statement of reasons for the appeal but if not, such a statement must be filed with the Board (Address: Board of Land Appeals, Office of the Secretary, Department of the Interior, 4015 Wilson Boulevard, Arlington, Virginia 22203) within thirty (30) days after the notice was filed. Additionally, the appellant must serve a copy of the notice of appeal and of any reasons, written arguments, or briefs on the Regional Solicitor, Pacific Southwest Region (Address: U.S. Dept. of the Interior, 2500 Cottage Way, Room E-2753, Sacramento, CA 95825) and each adverse party named in the decision appealed from, in the

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manu~~er~~ prescribed in Sec. 4.401(c), not later than fifteen (15) days after filing the document. To avoid summary dismissal of the appeal, there must be strict compliance with the regulations. The appellant has the burden of proof by positive and substantial evidence wherein the decision appealed from is in error.

Edward F. Spang  
State Director, Nevada

2 Enclosures

1. Copy of Reservation
2. Appeal Information Form 1842-1

cc: State of Nevada,  
Nuclear Waste Project (w/enclosure) Certified Mail

bcc: Director (321), Room 3643, MIB (w/enclosure)  
DM, Las Vegas (w/enclosure)  
✓ DOE, Waste Management Project Office,  
Nevada Operations Office

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